

REMARKS

Claims 1-10 and 12-37 are pending in this application. Claims 1, 22, 26, 30, 32, and 35 are in independent form. Claims 2-10, 12-21, and 37 depend from claim 1, claims 23-25 depend from claim 22, claims 27-29 depend from claim 26, claim 31 depends from claim 30, claims 33-34 depend from claim 32, and claim 35 depends from claim 34. Claims 1, 12, 22, and 26, have been amended and claims 30-37 are new. Claim 11 has been canceled, with the elements of claim 11 being incorporated in claim 1. New claims 31-37 are directed to alternative embodiments of the device. No new matter has been entered. Claim 1 has been amended to remove the extra period and claim 26 has been amended to correct the antecedent basis error.

In the office action, the examiner rejected claims 1-2 as anticipated by U.S. Patent No. 2,292,509 to Carson. Claims 1, 3, 15, 20, and 21 were rejected as anticipated by U.S. Patent No. 5,348,041 to Clark, and claims 1, 4, 9-14, 18 and 22-25 were rejected as anticipated by U.S. Patent No. 4,621,945 to Schafer et al. Several other claims were also rejected as obvious based upon combinations of the above-noted references and several other references.

Carson concerns a valve assembly that is positioned inside a container. The valve assembly includes a disc valve 18 that is positioned on a valve seat 17. The valve 18 opens with a lever action at the top of the valve seat 17 utilizing a two part motion. The first part of the motion, which travels through about 15 degrees, is slow and includes a high amount of leverage for unseating the valve from the valve seat. After the valve travels past about 15 degrees, the valve opens more easily and freely. (Carson at page 2, first col., lines 8-23). As shown in Fig. 6, the valve 18 is a butterfly-type valve. The specification does not define the angle of the valve seat, but the drawings appear to reflect an angle of about 75 degrees or more from the horizontal.

The pending claims differ from Carson in a number of ways. First the angle of the valve is different. Second, Carson does not teach a flapper valve, or a flapper valve having a rigid plate joined to a flexible seal. Third, Carson does not teach an inlet that has a smaller dimension than the outlet. Carson teaches the opposite.

Schafer concerns a valve assembly that utilizes a flexible flapper valve 32 that is coupled to a float 42. The flap 32 is positioned adjacent a vertical valve seat in the form of a metering plate 30. The opening of the inlet is greater than the opening of the outlet of the assembly, as shown in Fig. 3, since the seal ring 28 narrows the opening of the outlet. In addition, the metering plate restricts flow through the outlet, which effectively makes the outlet opening

smaller than the inlet. The pending claims differ from Schafer because the angle of the valve is not in the claimed range. In addition, Schafer does not teach the claimed flapper valve, which in one of the claimed embodiment, utilizes a rigid plate coupled to a flexible seal. In addition, the inlet opening is not smaller than the outlet opening, as claimed in one of the embodiments.

Clark concerns a very different valve separator device that utilizes two floats in order to separate oil from a liquid. The primary float serves as part of the valve and closes the outlet to the device at a prescribed time. Thus, Clark does not use a flapper valve as claimed. In addition, the valve seat is horizontal, and therefore not within the prescribed angular range.

For each of the above reasons, the noted claims are not anticipated by the prior art cited by the Examiner. In addition, applicants submit that the obviousness rejections are also mooted in view of the claims, as amended.

It should be noted that the claimed angle of the valve seat has a benefit to the design because it utilizes the effects of head pressure, gravity, and/or flow pressure from the outer body of liquid in order to open and close the valve. Thus, the claimed angle is not simply a matter of design choice in the claimed embodiments. Further, use of an angled valve seat provides a larger diameter effective opening in the outlet pipe, so it is not necessary to open the valve as far as would otherwise be necessary with an opening that is not angled.

In view of the above amendments and remarks, applicants respectfully request that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help to resolve any remaining issues.

No fees are believed to be due with the submission of this Amendment other than the fees associated with the additional claims. Should any other fees be required, the Commissioner is authorized to charge such fees to deposit account No. 50-1432.

Respectfully submitted,

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